REMARKS

Claims 1- 67 remain in this application, Claims 1, 2, 7, 10-12, 14-16, 25, 35, 46, 56, 57 and 61-66 being in independent form.

Allowable Claims

Applicant notes with appreciation the allowance of Claims 7-9, 11-13, 15, 17-55, 57-60, and 63-67, and the indication that claim 2 would be allowable if rewritten so as not to depend from a rejected base claim. Claim 2 has been placed in independent form and thus stands allowed. Thus, the majority of the claims presently stand allowed.

Claim Objections

Claim 45 was objected to because of a minor informality. This minor informality has been corrected in a non-narrowing manner which does not affect the scope of the claim as suggested by the Examiner. Thus, withdrawal of the objection is respectfully requested.

Preferred Embodiment of Present Application

The present application, in preferred embodiments, is directed high frequency oscillator circuits and methods thereof, which can filter or attenuate flicker noise. As Applicant has observed, phase noise is produced as a result of a **lower frequency noise signal** found in active elements used in the oscillator. This lower frequency signal is modulated (up converted) by the fundamental signal tone, resulting in the spreading of the oscillator frequency energy beyond the intended target frequency.

This lower frequency noise signal source is often referred to as flicker noise (commonly referred to in the literature as 1/f) in bipolar and Metal Oxide Semiconductor (MOS) transistors. The 1/f noise energy in bipolar transistors is known to be significantly less than that of MOS transistors. This is the reason why practically all low phase noise LC oscillators are built using bipolar transistors or even more esoteric transistors such as Galium-Arsenide devices.

The advancements in scaling of the device features in semiconductor processing allow multi-gigahertz operating frequencies to be readily achievable. Unfortunately, the same scaling down of MOS transistors have the opposite effect on the 1/f noise characteristics. The smaller device geometries are, the higher the 1/f noise components, leading to higher noise on the final oscillator. For example, an attenuating device of an embodiment of the present application may have a characteristic such that the fundamental frequency is from approximately ten times to twenty times a high pass bandwidth of a combination of the frequency dependent amplifier and the attenuating device. The present application, in its various preferred embodiments, solves this flicker noise problem by providing sufficient attenuation.

Prior Art Rejections

Claims 1, 61 and 62 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by *Hajimiri et al.* Reconsideration and withdrawal of the art rejections are respectfully requested in view of the following remarks.

Rebuttal of Prior Art Rejections

Claims 1, and 61 each recites an attenuating device or means for attenuating the flicker noise. Claim 62 recites the step of attenuating the flicker noise. None of the art of record is seen to teach or suggest how to solve the flicker noise problem.

Hajimiri et al is directed to a system and method for analyzing phase noise in differential cross-coupled inductance-capacitance oscillators. The effect of a tail current and tank power dissipation on voltage amplitude is shown. However, **the ability of the tail and tank capacitors to attenuate phase noise is achieved, at best, at only high frequencies** and thus has no effect on flicker noise, occurring at low frequencies, as will be explained as follows.

In *Hajimiri et al.*, in section B on page 719 and 720, the effect of the tail capacitor is discussed in conjunction with Figure 5. As Applicant understands the description, the tail capacitor is to be placed in parallel with the current source. As such, at high frequencies, it will act as a short and will reduce or attenuate oscillation. At low frequencies, the capacitor will act as an open circuit and thus have no effect of attenuating oscillation.

As understood by Applicant, ***Hajimiri et al* acts opposite to the invention** claimed in each of claims 1, 61, and 62. The claimed invention attenuates lower frequency flicker noise signals, and does not attenuate higher frequency signals. *Hajimiri et al* attenuates higher frequency signals and does not attenuate lower frequency signals including flicker noise. As such, ***Hajimiri et al* not only fails to provide any teaching or suggestion** of the claimed device, means or method step for attenuating flicker noise as respectively claimed in claims 1, 61 and 62, it actually acts opposite to the claimed invention **and thus teaches away from the claimed invention.** Therefore, ***Hajimiri et al* cannot alone anticipate** any of the claims, **nor can it be combined with any other reference(s)** to render any of claims 1, 61, and 62 unpatentable. Accordingly, Claims 1, 61, and 62 are believed patentable over *Hajimiri et al.*

A review of the other art of record has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of *Hajimiri et al*, as a reference against any of the independent claims herein. The claims are therefore believed patentable over the art of record.

Further Prior Art Rejections and Rebuttal

Claims 3-6, 10, 14, 16 and 56 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Hajimiri et al* in view of *Prior Art Figure 2.* Reconsideration and withdrawal of the art rejections are respectfully requested in view of the following remarks.

Even assuming *arguendo* that *Prior Art Figure 2* could be combined with *Hajimiri et al* (which Applicant does not admit for the reasons expressed above wherein *Hajimiri et al* teaches away from any such combination), *Prior Art Figure 2* would still fail to make up for the previously mentioned deficiencies of *Hajimiri et al.* As claims 3-6, 10, 14, 16, and 56 in this application are each dependent from one or another of the independent claims discussed above, they are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is also respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application. Withdrawal of all outstanding objections and rejections and allowance of each of claims 1-67 in connection with the present application is earnestly solicited.

Interview Requested, If Necessary

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley, Reg. No. 34,313 at the telephone number (703) 390-3030.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) hereby petition(s) for a one (1) month extension of time for filing a reply to the outstanding Office Action and submit the required $110.00 extension fee herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,
HARNESS, DICKEY, & PIERCE, P.L.C.

By _____

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